© Entomological Society of Indochina
អ្នកជំនាញខាងជាណកសាស្ត្រឥណ្ឌូចិន
The Indochina Entomologist
OPEN ACCESS
New Taxon
ICE, 2 (29): 301–310 (2026)
ISSN (Online) 3065-1107
www.indochinaentomologist.com

https://doi.org/10.70590/ice.2026.02.29
http://zoobank.org/urn:lsid:zoobank.org:pub:8C518B93-B1F4-4FF3-B18A-B433B98291D3

Description of *Zelenkaesalus lizechuani* sp. nov. (Coleoptera: Lucanidae), the first species of the genus from China

Yi-Fan WANG

School of Mathematical Sciences, Xiamen University, Xiamen 361000, China
https://orcid.org/0009-0006-4815-844X; yfwang200109@163.com

Abstract: The genus *Zelenkaesalus* Krikken, 2008 belongs to the lucanid subfamily Aesalinae, currently comprising 6 species. All species are distributed in the southeastern region of Asia. A new species, *Z. lizechuani* **sp. nov.**, is described from Yunnan, China.

Keywords: Aesalinae, morphology, taxonomy, Yunnan Province

中国第一种隐斑锹记述——李氏隐斑锹（鞘翅目：锹甲科）

王一凡

数学科学学院，厦门大学，厦门 361000，中国

摘要：锹甲科斑锹亚科的隐斑锹属目前包含 6 个物种，它们均分布于亚洲东南部。本文记述了来自中国云南省的一新物种——李氏隐斑锹 *Z. lizechuani* **sp. nov.**。

关键词：斑锹亚科，形态学，分类学，云南省

Citation: Wang Y-F 2026: Description of *Zelenkaesalus lizechuani* sp. nov. (Coleoptera: Lucanidae), the first species of the genus from China. *The Indochina Entomologist*, 2 (29): 301–310. [王一凡 2026: 中国第一种隐斑锹记述——李氏隐斑锹（鞘翅目：锹甲科）. 中南半岛昆虫学家, 2 (29): 301–310.]
https://doi.org/10.70590/ice.2026.02.29

Accepted by Tian-Long HE: 12.V.2026; published online: 19.V.2026

Copyright Yi-Fan WANG. This is an open access article distributed under the terms of the Creative Commons Attribution License (CCBY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Echinoaesalus Zelenka, 1993 is an Asia endemic genus in the lucanid subfamily Aesalinae MacLeay, 1819, comprising 7 species (Paulsen 2018). Previously, only one species of this genus, *E. chungi* Huang & Chen, 2015, had been recorded from China, specifically from Taiwan Island (Huang & Chen 2017). All the other species in the genus are distributed in Southeast Asia (Huang *et al*. 2011, 2015).

Krikken (2008) established the subgenus *Zelenkaesalus* of *Echinoaesalus* based on the presence of distinctive metasternal and abdominal sulci that accommodate the retraction of the legs. Huang *et al*. (2011) regarded this subgenus as the *E. timidus* species group. Paulsen (2018) elevated this species group to the genus *Zelenkaesalus*. Members of this genus by the presence of well-developed sulci on the abdomen and metasternum for receiving the entire tibia and tarsus, the canthus is short and the eye in dorsal view is almost entirely covered by the pronotum when the head is retracted (Paulsen 2018). The genus *Zelenkaesalus* comprises six species before this study, all distributed in Southeast Asia: *Z. cechovskyi* Huang, Bartolozzi & Chen, 2015; *Z. gedeensis* Huang & Wu, 2011; *Z. javanus* Krikken, 2008; *Z. pazuzus* Paulsen, 2018; *Z. sabahensis* Zelenka, 1994 and *Z. timidus* Krikken, 1975.

Here, the first species of the genus *Zelenkaesalus* is recorded and illustrated from Yunnan, China: *Z. lizechuani* **sp. nov.**

Material and methods

Habitus and male genitalia photos were taken using a Canon® 5D Mark III with MP-E 65mm f/2.8 1-5X Macro Lens and two Godox V850II flashes as light source. Detail photos were taken using a Keyence® VHX-X1. Genitalia of the specimens were prepared by clearing the abdomen with 15% KOH at 135°C for 5 minutes. After rinsing the KOH with distilled water, the genitalia were transferred to glycerin for further examination. Zerene Stacker was used for image stacking. All images were modified and grouped into plates in Adobe Photoshop 2023.

The following abbreviations are used: BL—length of body is the distance from the midpoint of the anterior margin of the pronotum to the apex of the elytra; BT—thickness of body is the distance from the metathorax to the highest point of the elytra; EW—maximum width of elytra; Le_n (Re_n)—clumps of bristles in the nth row of the left (right) of the elytral suture; $Le_{n,m}$ ($Re_{n,m}$)—the mth clump of bristles toward the elytral apex in the nth row of the left (right) of the elytral suture.

The classification system follows Paulsen (2018).

Specimens examined in this study are deposited in the following collections:

CYFW—Private Collection of Yi-Fan Wang, Suzhou;

CZCL—Private Collection of Ze-Chuan Li, Beijing;

CZHZ—Private Collection of Zhi-Hong Zhan, Nanjing;

IZCAS—Institute of Zoology, Chinese Academy of Sciences, Beijing;

MYNU—Invertebrate Collection of Mianyang Normal University, Mianyang, China.

Taxonomy

Family *Lucanidae* Latreille, 1804

Subfamily *Aesalinae* MacLeay, 1819

Genus *Zelenkaesalus* Krikken, 2008 隐斑锹属

The Chinese generic name refers to its compact defensive posture, by having well-developed sulci on the abdomen and metasternum for receiving the entire tibia and tarsus, allowing all appendages to interlock securely.

***Zelenkaesalus lizechuani* sp. nov. 李氏隐斑锹**

https://zoobank.org/8E1DE7AF-7161-43C5-BAE9-C1E464D95353

Figs 1–5

Type material: Type material. **Holotype:** ♂, CHINA: Yunnan, Dehong, Yingjiang County, Taiping Town, Mangyun [芒允], 900 m, III.2026, Gui-Chang Liu [刘贵昌] leg. (IZCAS). **Paratypes:** 2♂2♀, same as holotype (CYFW); 2♂1♀, same as holotype (CZCL); 10♂10♀, same as holotype (CZHZ); 3♂, same as holotype except 890 m, 15.II.2025 (MYNU); 3♂4♀, same as holotype except 920 m, 2.IV.2025 (MYNU).

Description. BL: 3.7–4.9 mm, BT: 2.0–2.6 mm, EW: 2.6–3.0 mm. Surface structures: scattered scale-like bristles, clumps of scale-like bristles and irregularly branched tomenta on dorsal surface of body dark brown. Four transversely arranged and bilaterally symmetrical clumps of bristles on surface of pronotum with outer clumps smaller. On dorsal surface of elytra, clumps of bristles arranged longitudinally, clumps distribution of all rows are asymmetrical; Le_1 with 3–4 clumps, Re_1 with 4 clumps, Le_2 with 4–5 clumps, Re_2 with five clumps, both Le_3 and Re_3 with three clumps, Le_4 with three clumps, Re_4 with five clumps; $Le_{1,1}$ and $Re_{1,1}$ relatively long, arranged symmetrically; $Le_{4,1}$ and $Re_{4,1}$ widely and sparsely distributed; Both $Le_{4,2}$ and $Re_{4,2}$ have fewer bristles than other clumps on dorsal surface of elytra (Figs 1A, C).

Holotype male. *Head* (Figs 1A, B; 2A; 3A, C). Width 0.50 times as wide as pronotum. Anterior margin of head broadly rounded. Anterior angles nearly rounded and posterior angles of canthus form an obtuse angle of approximately 120 degrees. Genal canthus form an angle of approximately 60 degrees in lateral view. Each mandible with a subapical dorsal tooth, a subapical ventral tooth, mola arcuate and an outer sharp angle present basally. Labrum subelliptical with setae on apex curved anteriorly toward midline, and about 0.20 times as wide as head. Mentum subrectangular with setae and with transversal frontal groove discontinuous at middle, and bent backwards at lateral ends. Antennal club composed of last three antennomeres and pubescent.

Thorax. Pronotum densely punctated. In ventral view, prosternal process as wide as 1.15 times length, with punctures irregularly distributed, anterior margin relatively flat, lateral margin curved inward, posterior margin rounded (Fig. 3E). Metasternum with long sulci at lateral sides fitted to receive mesotibia and mesotarsus.

Scutellum (Fig. 1A). Triangular, anterior half with irregularly branched tomenta, 0.87 times as wide as long.

Elytra (Figs 1A; 2A). Densely punctated, 0.94 times as wide as long, 0.61 times as thick as long and with lateral angle form an obtuse angle of approximately 120 degrees in lateral view.

Legs. Protibia gradually broadened from base to apex, with two small spines on outer lateral margin, and apical spine curved. Mesotibia and metatibia contracted in width from middle toward end. Tarsus nearly half as long as tibia.

Abdomen. Densely punctated, each puncture with a seta. Abdominal sternites I–III with long sulci fitted to receive metatibia and metatarsus.

Abdominal segment IX (Fig. 5E). Tergum IX elongated. Two rod-like sclerites fused as an arrow structure. Apically sharp, with lateral angle obtuse. Sternum IX, subquadrate, apically slightly sclerotized, with setae.

Male genitalia (Figs 5A–D). Basal piece short. Parameres 0.34 times as long as sclerotized part of median lobe. Median lobe slightly curved and broadened from base to apex, symmetric and membranous at lateral surfaces near apex; lateral membranous portion at apex occupying the distal 1/3 of the entire penis; dorsal plate broadly rounded at end; ventral plate long and pointing rightward in ventral view.

Variability of male paratypes. Individual variation is only found in arrangement of clumps of bristles on dorsal surface of elytra.

Female paratypes. (Figs 1C, D; 2B; 3B, D, F; 4B, C; 5F, G) Each mandible with a smaller subapical dorsal tooth than in males. Canthus smaller than in males. Labrum narrower than in males. Mentum subtrapezoidal, with less setae. Prosternal process narrower than in males. All other external characters as in male.

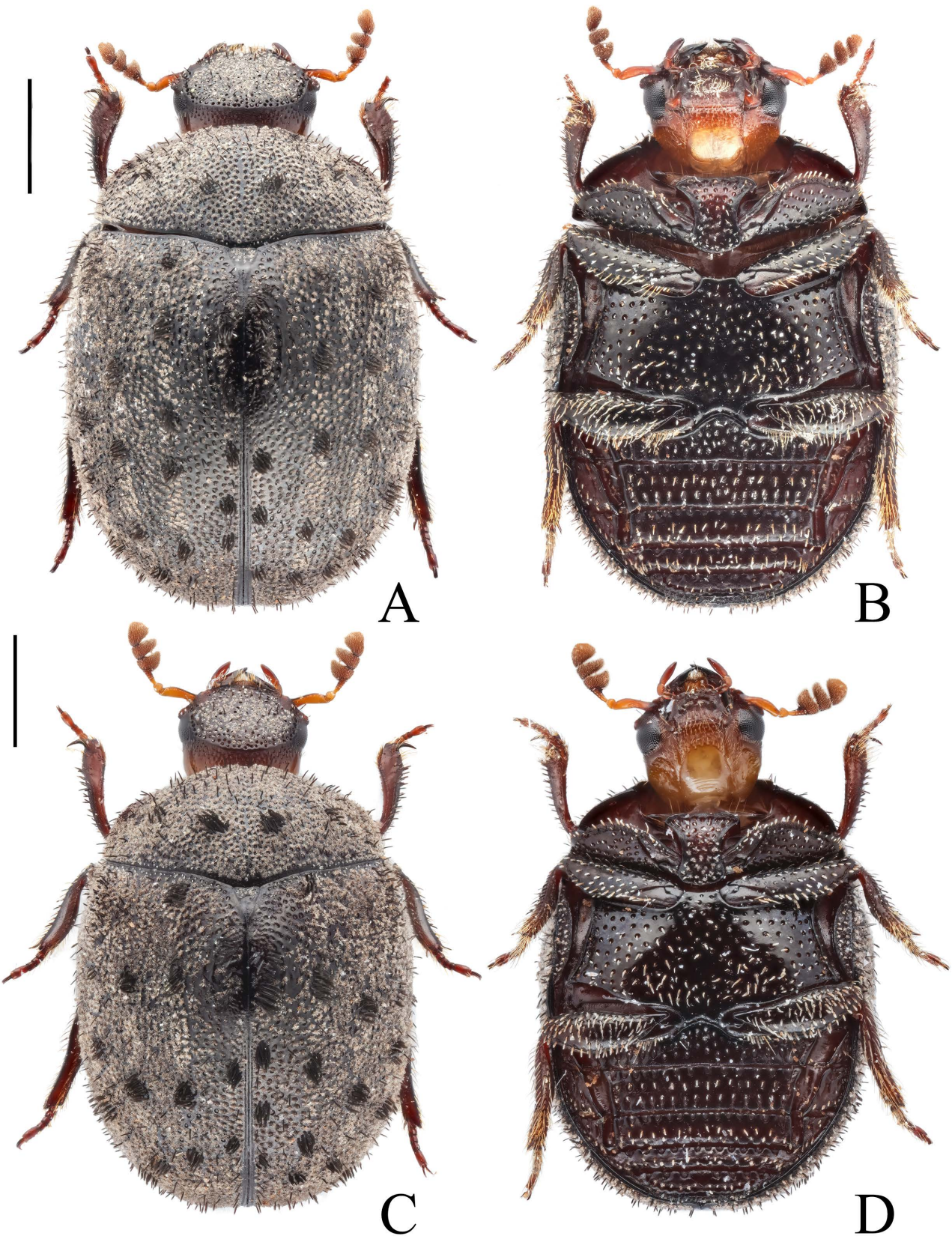

FIGURE. 1 Habitus of *Zelenkaesalus lizechuani* **sp. nov.**: **A, B** male **C, D** female. **A, C** dorsal view **B, D** ventral view. Scale bars: 1.0 mm.

Female genitalia (Fig. 5F). Hemisternites well sclerotized and setose near rounded apex, with styli elongate pointed outwards. Accessory gland rooted on bursa copulatrix at lateral side, closer to terminal end of bursa copulatrix than to entrance of bursa copulatrix. Bursa copulatrix full of sclerotized spines on outer surface. Spermatheca and its duct rooted on bursa copulatrix very near the terminal end of bursa copulatrix. Spermathecal duct much shorter than spermathecal gland.

Differential diagnosis. The new species can be easily distinguished from most members of the genus *Zelenkaesalus* by ventral plate of aedeagus narrowed toward apex.

Although, this new species exhibits similar morphological features with *Z. cechovskyi*, can be distinguished by the following characters:

In external morphology of males and females:

(1) genal canthus rounded in lateral view;

(2) mentum with transversal frontal sulcus discontinuous at middle;

(3) prosternal process wider with anterior margin relatively flatter, posterior margin rounded rather than obtusely angulate at middle and lateral angles sharper;

(4) anterior and posterior margin of the last three visible abdominal sternite only weakly curved;

(5) lateral angle of elytra sharper and situated more anteriorly.

FIGURE. 2 Lateral view of *Zelenkaesalus lizechuani* **sp. nov.**: **A** male **B** female. Scale bars: 1.0 mm.

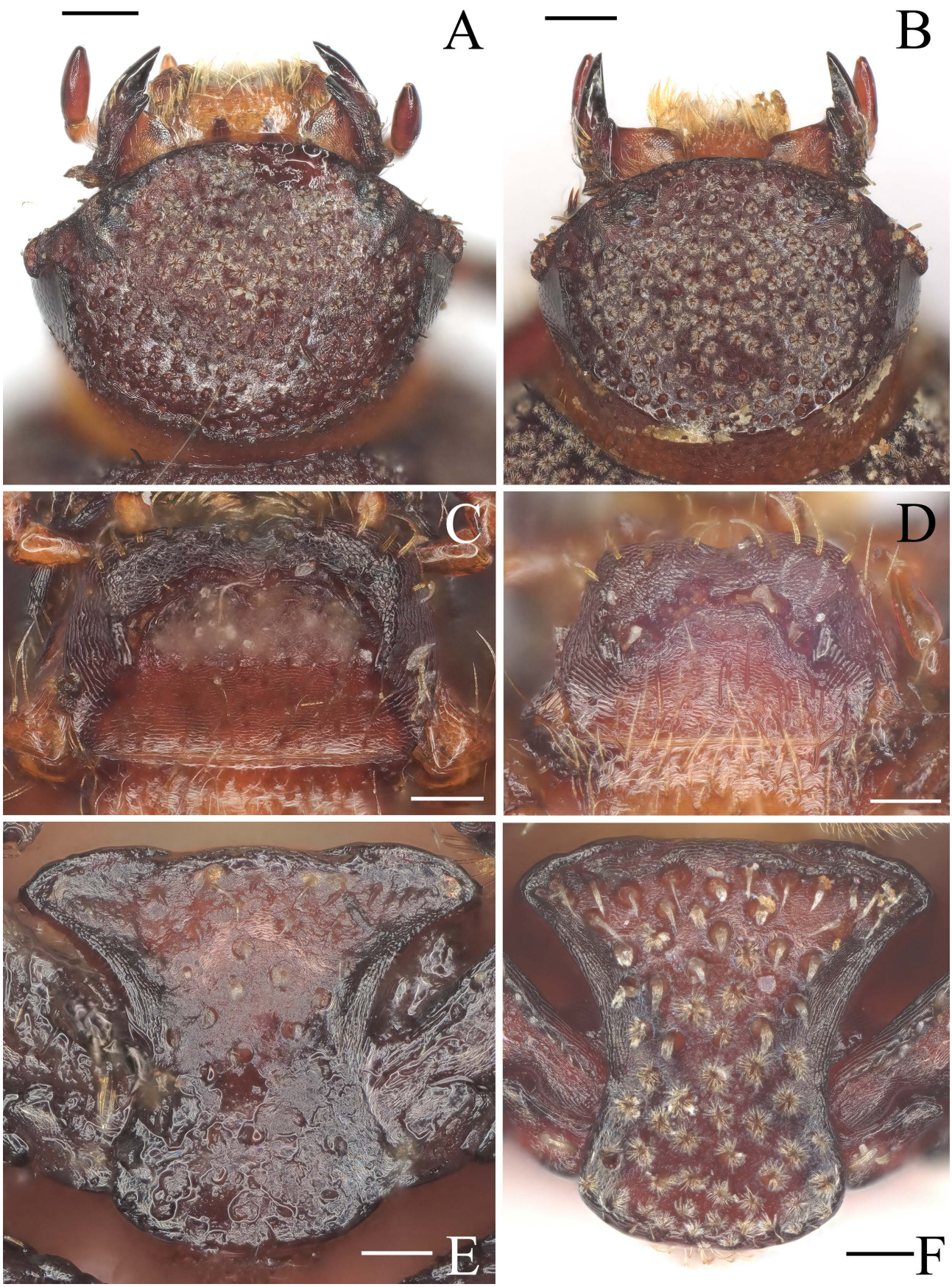

FIGURE. 3 External characters of *Zelenkaesalus lizechuani* **sp. nov.**: **A, B** head, dorsal view **C, D** mentum, ventral view **E, F** prosternal process, ventral view **D** antenna. Scale bars: 0.2 mm (A, B), 0.1 mm (C–F).

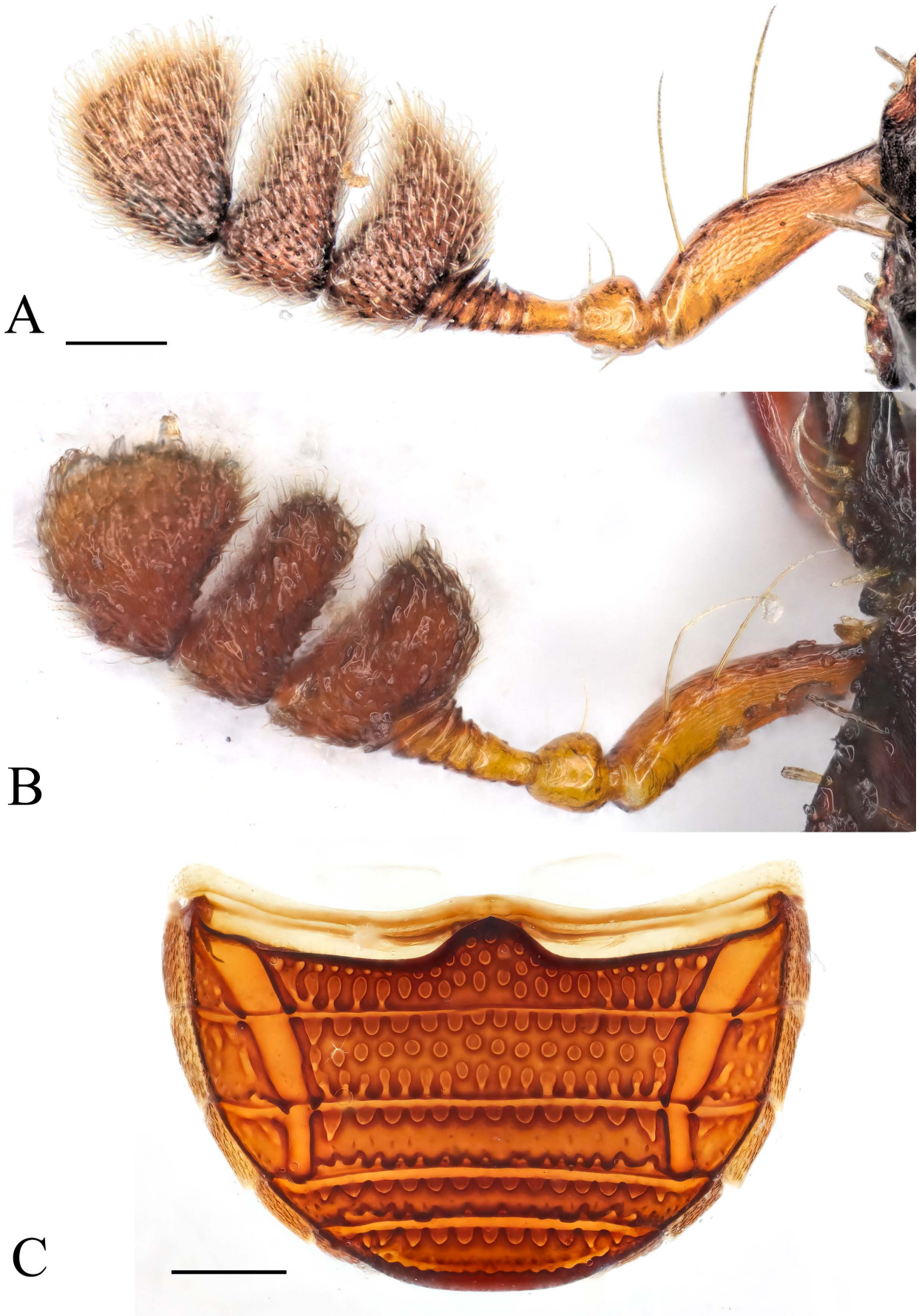

FIGURE. 4 External characters of *Zelenkaesalus lizechuani* **sp. nov.**: **A** antenna of male **B** antenna of female **C** abdominal sternites I–V of female. Scale bars: 0.1 mm (A**,** B), 0.5 mm (C).

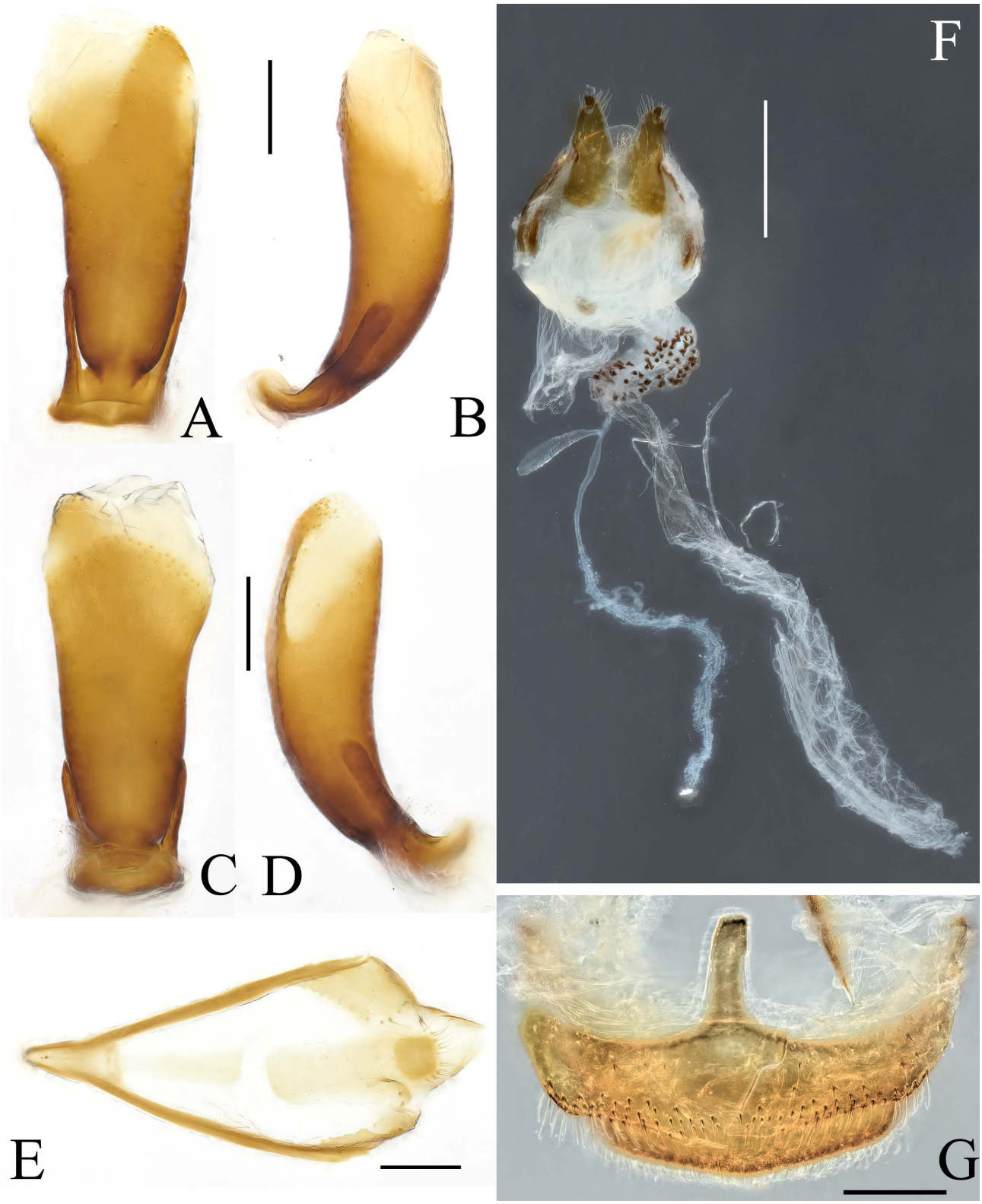

FIGURE. 5 Internal characters of *Zelenkaesalus lizechuani* **sp. nov.**: **A–D** aedeagus in ventral, left lateral, dorsal, and right lateral views **E** abdominal segment IX of male **F** female genitalia **G** last abdominal ventrite of female. Scale bar: 0.2 mm (A–E, G), 0.25 mm (F).

In male genitalia:

(1) paramere shorter;

(2) lateral membranous portion at apex shallower;

(3) ventral plate narrower and no free distal sclerite of median lobe.

In female genitalia:

(1) bursa copulatrix with fewer sclerotized spines on outer surface;

(2) spermathecal duct much shorter;

(3) accessory gland larger.

Distribution. China: Yunnan (Yingjiang County).

Etymology. This new species is in honor of Mr. Ze-Chuan Li [李泽川], who first recognized this new species.

Remarks. Compared with published photographs of known species, this new species exhibits different arrangements of the bristly clumps on the dorsal surface of the elytra. However, owing to the scarcity or indistinctness of illustrative figures in previous studies, the degree of intraspecific variation in the bristles is difficult to assess. Furthermore, the bristles are easily abraded, which may lead to misidentification. Given these limitations, I recommend that this character not be relied upon as a diagnostic feature.

In addition, the presence of prominent sclerotized spines on the outer surface of the bursa copulatrix may serve as a key diagnostic feature of the genus *Zelenkaesalus*. Among the two species of this genus for which female genitalia are known, i.e., *Z. cechovskyi* and *Z. timidus*, such sclerotized spines are present. To confirm the reliability of this character, further investigation of the female genitalia in other species of this group is needed.

Acknowledgements

I sincerely thank Mr. Ze-Chuan Li [李泽川] who provide valuable specimens for my study. I am also grateful to Mr. Zhi-Hong Zhan [詹志鸿] and Mr. Xu-Hong-Yi Zheng [郑徐弘毅] for their insightful comments and suggestions that greatly improved the manuscript.

References

Huang H & Chen C-C 2017: *Stag Beetles of China III*. Formosa Ecological Company, Taipei, xii + 524 pp. [黄灏 & 陈常卿 2017: 中华锹甲 [叁]. 福尔摩沙生态有限公司, 台北, xii + 524 pp.]

Huang H, Bartolozzi L & Chen C-C 2015: Notes on the genus *Echinoaesalus* Zelenka, 1993 (Coleoptera: Lucanidae), with the description of a new species from the Malay Peninsula. *Zootaxa*, 4039 (4): 553–565. http://dx.doi.org/10.11646/zootaxa.4039.4.5

Huang H, Imura Y & Wu L 2011: Description of three new taxa of *Echinoaesalus* Zelenka from Borneo and Java (Coleoptera, Lucanidae). *Kogane*, 12: 97–107.

Krikken J 1975: *Aesalus timidus* sp. nov., a remarkable addition to the Indonesian stag-beetle fauna. *Entomologische Berichten (Amsterdam)*, 35: 49–51.

Krikken J 2008: *Zelenkaesalus* subgen. n. for three Southeast Asian species of *Echinoaesalus* Zelenka, including *E. javanus* sp. n. (Coleoptera: Lucanidae: Aesalinae). *Koleopterologische Rundschau*, 78: 275–284.

Paulsen M J 2018: Generic changes in the stag beetle tribe Aesalini (Coleoptera: Lucanidae: Aesalinae) with the description of two new species. *Insecta Mundi*, 666: 1–10. http://digitalcommons.unl.edu/insectamundi/1188

Zelenka W 1993: *Echinoaesalus* gen. n. eine neue Lucaniden-Gattung aus Sudostasien (Coleoptera, Lucanidae). *Koleopterologische Rundschau*, 63: 235–237.

Additional information

Author contributions: The author solely contributed to this work.

Conflict of interest: The author has declared that no competing interests exist.

Data availability: All of the data that support the findings of this study are available in the main text.

Ethical statement: No ethical statement was reported.

Funding: This study was self-funded by the author.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of *ICE* and/or the editor(s). *ICE* and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.